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XVI. *Some Observations on Mr. Brande's Paper on Calculi.*
By Everard Home, Esq. F. R. S.

Read May 19, 1808.

THAT calculi in the human bladder are not dissolved by the internal use of alkaline medicines, is an opinion which I have long entertained, but the grounds of failure so clearly pointed out by Mr. W. BRANDE, were not known to me: I only knew from experience, that, to whatever extent the medicines are given, no such effect takes place. The circumstance of the exterior laminæ of calculi extracted from patients, who had persevered in a course of alkaline preparations, having been found softer than the parts towards the centre, has always been considered as a proof of the action of the medicines upon the calculus, and led to the belief, that where the stone was small, it might be wholly dissolved. This, however, Mr. W. BRANDE has now proved to be a deception, and that the soft part is not a portion of the original calculus, but a newly formed substance, in which the uric acid is not deposited in crystals, but mechanically mixed with the phosphates, and the animal mucus in the urine.

Having met with cases, which confirm Mr. W. BRANDE's observations, it will be satisfactory to state them, as they may assist in doing away many erroneous notions generally entertained on this subject.

The opinion, that calculi in the human bladder have been entirely dissolved, has received its principal support from instances having occurred, and those by no means few in number, where the symptoms went entirely away while the patients were using alkaline medicines, and never afterwards returned. This evidence appears to be very strong, but it will be found from the following cases that it is not so in reality. Since the fallacy has been detected in all the instances in which an opportunity was afforded of examining the bladder after death. Two of these I shall particularly notice, because they were published during the patients' life time in proof of the stone having been dissolved.

Both patients were great sufferers from the symptoms of stone for many years; but when they arrived at the age of sixty-eight, or thereabout, the symptoms entirely left them. The one had been taking the saline draught in a state of effervescence, under the direction of the late Dr. HULME: the cure was attributed to this medicine, and the case was published in proof of its efficacy. When the patient died I examined the bladder, and found twenty calculi; the largest of the size of a hazel nut, the others smaller. It appeared that the going off of the symptoms had arisen from the posterior lobe of the prostate gland having become enlarged (a change which it frequently undergoes about that period of life,) and having formed a barrier between the calculi and the orifice of the bladder, so that they no longer irritated that part either in the act of making water, or in the different movements of the body, but lay in the lower posterior part of the bladder without producing any disturbance. Their

number prevented the pressure from being great upon any one part of the intestine immediately behind the bladder, and their motion on one another rendered their external surface smooth, and probably prevented their rapid increase. The other patient was under a course of PERRY's lixivium; and when the symptoms went away, he published the case in proof of the efficacy of that medicine in dissolving the stone. I examined the bladder after death, and found fourteen calculi; the largest of the size of a nutmeg, the others smaller. There was the same enlargement of the posterior lobe of the prostate gland, and the calculi were exactly under the same circumstances as in the former case.

In several cases, in which I have examined the body after death, calculi have been found inclosed in cysts, formed between the fasciculi of the muscular coat of the bladder, so as to be entirely excluded from the general cavity, and therefore had not produced any of the common symptoms of stone. I have seen in the same bladder, two, three, and even four such cysts, each containing a calculus of the size of a walnut.

It is a circumstance deserving notice, that in the case, which gave celebrity to Mrs. STEVENS's medicine, and procured her a remuneration from Parliament, the bladder was not examined after death.

That calculi in the bladder do sometimes increase, while the patient is using alkaline medicines, is fully proved by the following examples, which also shew that the uric acid and phosphates are formed in different proportions, according to the peculiarities of the constitution.

A gentleman who suffered from symptoms of stone was

sounded and a stone was found in his bladder. I put him on a course of alkaline medicines, and he voided a small compact calculus, composed of uric acid, and evidently formed in the kidney. He was desired to persist in the use of the medicines, which he did at intervals for four or five years, suffering occasionally in a slight degree, but he did not pass any more calculi. He died at the age of seventy-five. On examining the bladder, its whole cavity, (the capacity of which was equal to a pint measure) was completely filled with soft, light, spongy calculi, three hundred and fifty in number, and of different sizes, from that of a walnut to a small pea. They were composed of a mixture of uric acid in powder, the phosphates, and animal mucus; and differed so much from the calculus voided soon after the patient began the use of alkalies, that they appear to have been formed after that period in the manner mentioned by Mr. W. BRANDE.

A gentleman, who was found to have a stone in his bladder, was persuaded that it was so small that it might be dissolved, and with this view he took the fossil alkali, both in its caustic and mild state, for about three months; but at the end of that period the symptoms were encreased, and he submitted to have it extracted by an operation. On examining the calculus after it was extracted, the external part, for the thickness of $\frac{1}{10}$ of an inch, was entirely composed of triple phosphate, in a state of perfect spiculated crystals, so as to present a very rough irritating surface to the internal membrane of the bladder, while the inner parts of the calculus were made up of a mixture of uric acid and phosphates, so that the alkali had prevented the formation

of uric acid, but the phosphates were deposited more rapidly than before.

A gentleman, in whose urine the uric acid appears in a solid form, immediately after it is voided, has the same appearance in the urine, even when nine drachms of soda dissolved in water, impregnated with carbonic acid, are taken in twenty-four hours ; so that in this instance the alkali does not even counteract the formation of uric acid.